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## Effect of Adrenocorticotropic Extracts on Accessory Reproductive Organs of Castrate Rats.\*

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Clinical<sup>1-7</sup> and some experimental evidence<sup>8-12</sup> indicates a definite but obscure interrelationship between the pituitary, the adrenal cortex and the gonads. It is surprising that a number of experimental workers have been unable to demonstrate a direct interrelationship between the adrenal cortex and the gonads.<sup>13-17</sup> However, Reichstein has recently isolated a male hormone-like substance from the adrenal cortex.<sup>18</sup>

The stimulation of the prostate and seminal vesicles in castrated rats by injections of adrenocorticotropic extracts is herein reported. Adrenocorticotropic extracts were made from whole sheep pituitaries using the HCl-acetone method. The activity of the adrenocorticotropic preparations was tested in hypophysectomized<sup>19</sup> and in

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normal, immature, male rats.<sup>20</sup> Growth, thyrotropic and gonadotropic hormones were absent. When tested in squabs, the extracts were found to contain varying amounts of lactogenic hormone.

Both the testes and epididymes were removed from 21-day-old male rats. Injections were begun on the day following the operation and continued daily over a period of 9 days. The control castrated rats were uninjected. The experimental and control animals were sacrificed on the tenth day after castration. The adrenals and accessory sex glands (prostate, coagulatory gland and seminal vesicles) were removed, weighed, fixed in Susa or Bouin's fixative, and then sectioned and stained for histological examination.

TABLE I.

| Extracts           |                   | Adrenal Weights<br>mg. | Weights of Accessory<br>Sex Glands<br>mg. |
|--------------------|-------------------|------------------------|---|
| No.                | Total Dose<br>mg. |                        |   |
| M141 I             | 414               | 59.1                   | 90.4                                      |
|                    |                   | 79.8                   | 111.5                                     |
| M152 I             | 297               | 66.8                   | 121.0                                     |
|                    |                   | 55.4                   | 159.8                                     |
|                    | 603               | 42.5                   | 111.5                                     |
|                    |                   | 91.8                   | 120.2                                     |
|                    |                   | 119.2                  | 106.9                                     |
| Controls (10 rats) |                   | 22.4                   | 54.8                                      |
| (uninjected)       |                   | (17.4-29.6)            | (39.0-88.0) <sup>21</sup>                 |

The adrenal cortices of the injected rats were greatly stimulated in contrast to the cortices of the controls. The chief changes were the marked hyperemia, increased fat content of the cells throughout the cortex, cellular hypertrophy,<sup>22</sup> and numerous mitoses in the region of the zona glomerulosa.

The prostates of the controls showed a large amount of connective tissue, small tubules, a few acini with cuboidal or low columnar epithelium, and some colloid. The prostates of the treated animals showed evidences of stimulation in that there were larger tubules, more acini, tall columnar epithelial cells with a clear supranuclear zone, numerous mitoses and an increased amount of colloid.<sup>23</sup>

The only evidence of stimulation in the seminal vesicles of treated animals was that the epithelium was slightly higher than that of the controls.<sup>24</sup>

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